A study of Interactive Game Art Expression with Gamification Application

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Abstract—This study investigates and analyzes the mechanism of interactive game art with Gamification application, and studies and suggests its form and expression. Moreover it compares and analyzes artwork with Gamification application, and suggests possibility of new form and expression through interactive nature that may be considered as its biggest characteristics. Meanwhile, if existing game art can be said that it was used with many installations to immerse users for the purpose of fun, entertainment, pleasure or commercial requirements, Gamification interactive art can be said that on top of such game art Gamification elements are added so that rather than employing method of interpreting game art, it promotes user participation by drawing out voluntary immersion of users. What is more, a form suggested in this study can be utilized in producing interactive artwork.

Keywrods—Interactive art, Game Art, Gamification, Interactivity.

I. INTRODUCTION

Recent trend shows that artists are experimenting Gamification on their artwork by utilizing game mechanism in various ways[1]. Gamification is a communication technique that leads active user participation and action through application of game mechanism in the non-game areas. Adaptation into game art in order to entertain and provide continuity has been spotted. In other words, while existing interactive art expanded many other digital technology genre and scope, it added Gamification in the process of leading audience as the subject matter of such work. As a result, audiences are able to react to the artwork in real-time and is progressing toward much more entertaining for arts. Game is already a representative interactive media that is familiar to the public in its lives and culture. Accordingly this study analyzes interactive art with the application of Gamification mechanism, investigates and analyzes new form, and examines the characteristics of new aesthetic possibility [2] [3].

For this purpose Chapter 1 explains study background and composition as Introduction while Chapter 2 defines Gamification and clarifies Gamification-based interactive game art mechanism as Related Work.

Chapter 3 compares and analyzes the application case studies based on Related Work discussion. Chapter 4 begins by reviewing interactive game art case studies seasoned with Gamification, and explains form of interactivity of audience participation of artwork ultimately suggesting expression direction. Chapter 5 draws out conclusion and content for future studies.

II. RELATED WORK

As no preceding studies on form and related studies on interactive game art with Gamification application exist, this study seeks to find case studies and form. In this Related Work, Chapter 2.1 sets out to define Gamification which is a theory of game mechanism application in the non-game areas where Chapter 2.2 investigates composition of interactive game art with Gamification application.

II.1. Gamification

Gamification is a new movement of an application of game mechanics, such as points, level-up, ranking, achievements, competition, and reward, i.e. elements that make game fun, and game thinking in non-game areas to attract positive effects[4]. The idea conceived by the New Games Movement in U.S. derived and developed Gamification. Samsung Economic Research Institute defines Gamification as a phenomenon that increases voluntary user participation and positive behavior using game mechanism, interaction, and structure [5].

In the interactive game artwork light however Gamification may be regarded as a development of user participation and responsive sharing to enjoy computer-like games in real-time engagement by the use of game mechanisms [6] [7].

II.2. Composition of Gamification-based Interactive Art

A Gamification-based interactive game artwork motivates voluntary and continued enjoyable user participation with the application of game mechanics and game elements in the game art. Interaction is done so as in the interactive art. Such Gamification mechanics are composed as in Table 1, and in general interactive game art shows cases of entire or partial adaptations.
III. INTERACTIVE ARTWORK CASE STUDIES

Chapter 3 analyzes interactive artwork of Woodland Wiggle case. Woodland Wiggle is an interactive game artwork developed by Chris Oshea, a Technology Creative Designer, that runs parallel with psychotherapy and exercise therapy of pediatric patients. It was developed in C++ and utilizes the use of Open Framework of Xbox Kinect camera. Figure 1 shows a Woodland Wiggle work of children’s ward of British Royal London Hospital. Arguably children are enjoying the viewing of a game art that combines interactive media art technology and story [8] [9].

Table 2 is an analysis of Figure 1, which shows a classification of stages of motivational elements for interaction and user where application of game mechanics are made in the interactive artwork.

The analysis of case studies of interactive art with Gamification application in Related Work in Chapter 2 and Interactive Art Case Studies in Chapter 3 suggests that many game techniques are in use for the mechanics

<table>
<thead>
<tr>
<th>Classification</th>
<th>Interaction</th>
<th>Motivation</th>
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<tbody>
<tr>
<td>Story interaction</td>
<td>Space, Structure</td>
<td>Amusement, Experience, Adventure, Challenge</td>
</tr>
<tr>
<td>Gamer interaction</td>
<td>Artwork viewers</td>
<td>Competition, Exchange</td>
</tr>
<tr>
<td>Activity interaction</td>
<td>Artwork viewing activity</td>
<td>Condition, Feedback, Reward</td>
</tr>
</tbody>
</table>

**Definition 3.1** Definition of Gamification-based interactive art

Interactive art produced using game techniques of challenge, competition, achievement, reward, and relationship.

IV. GAMIFICATION-BASED INTERACTIVE ART

Gamification application by far increased user participation rate. What is more, Gamification game art can extend a relatively simple objective of game productivity, an entertainment effect obtained in game, in various ways. 'My Marriott Hotel' may be construed as an ordinary game however it brings extraordinary recruiting effect through indirect experience. First, such attempt works because it matches prospective employees’ age group, which is between the ages of 10 to 20 who generally play games.
It is generally known that Marriott Hotels & Resorts use this game to recruit around 50,000 local human resources required for the business expansion in China and India. Marriott Hotels & Resorts promotes its recruitment system to be the first to use Facebook game.

Besides Marriott Hotels & Resorts, Siemens, a German engineering and electronics company headquartered in Berlin and Munich, also devised a game called 'Plantville' that enables Facebook users to indirectly experience infrastructure constructions. Users enjoy constructing virtual plants that provide efficient infrastructure such as employing workers and expanding systems for safety through Facebook. Users are able to construct and manage plant that manufactures or builds bottles, vitamins, and trains, where each type of plant is faced with different challenges, and learn how to construct or operate facilities through quizzes in mini games. Siemens have announced that "this game not only promotes products and corporation to the general public, Siemens workers and potential clients but is also useful for recruitment as users are able to indirectly experience infrastructure construction and operation."

**Definition 4.1 Definition of Gamification-based game art**

Gamification-based game art signifies the extension of a relatively simple objective called game productivity, an entertainment effect obtained in game, in various ways.

The analysis of case studies of interactive art with Gamification application through artwork case studies in Chapter 4 determines the extension of a relatively simple objective called game productivity, an entertainment effect obtained in game, in various ways. Consequently Gamification-based game art is defined.

The difference between interactive art with Gamification application in Chapter 3 and Gamification-based interactive art in Chapter 4 confirmed that when producing artwork the change in artwork production depends on the difference between purpose and viewer of the final work as evidenced through analysis and definition.

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**TABLE IV**

<table>
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<td>My Marriott Hotel &amp;</td>
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<tr>
<td>Plantville (Social</td>
<td>Social feedback</td>
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<tr>
<td>Game)</td>
<td></td>
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<tr>
<td>Gamer interaction</td>
<td>Other participating users</td>
<td>Competition, Exchange, Mission</td>
</tr>
<tr>
<td>Activity interaction</td>
<td>Artwork experiencing stage</td>
<td>Condition, Feedback, Reward</td>
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**V. Conclusion**

Interactive art and game art are evolving to a different type of art expression form as existing artwork is recreated and integrated with technology by new media. Kate and Eric attempted classification of interactive art and game art into 3 'interactivities,' namely sensory interaction activity, functionary interaction activity, and expressive interaction activity [10].

However it is becoming difficult to classify and diversify artwork of interactive art and game art as Gamification elements are added to the existing general characteristics.

Accordingly this study proposes defining two artworks with Gamification application definition through the analysis and definition of artwork as Gamification-based game art and suggests details under Review 5.1.

**Review 5.1 Form of Gamification-based Game Art**

- When producing interactive game art, game producing techniques must be utilized in the design.

  Challenge, competition, achievement, reward, relationship, etc.

- It must be expansive with the game play through entertaining effect.

Above two artworks are being developed into art that reflects the society. The reason being is that the design is centralized in mutual exchange such as interacting and reacting of artwork and by constructing virtual interface.

Evidenced in these similarities and through related research, this study was able to verify artwork characteristics and confirm that the interactive game art led audience immersion and dynamic participation in the artwork owing to the new element called Gamification.
The analyzed and proposed Review 5.1 of this study is expected to be a design material reference for the interactive game art production.

For future research, the anticipation is with designing and implementing interactive game art that is more immersive for audience based on the result of this study.

REFERENCES


AUTHORS

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